

ag. Sub C18 > 90. (AMENDED) The system of claim 86 wherein the shoes have platforms extending toward the sash from sash weight support regions engaged by the support arms [are pivotally movable on opposite stiles of the sash].

REMARKS

Many of the original claims were objected to for functional preamble recitations and other clarity problems that have all been remedied by amendment. All the elected claims are now clear and unobjectionable.

The claiming of elements as extrusions was not given patentable weight in the original claims. Amendments have also clarified this subject matter. The present claims do not deal with extrusion as a process, but as a structural limitation. This is possible because extrusion is a known way of forming a profile that extends uniformly for an indefinite length so that "extrusion" structurally limits and characterizes an element as being formed from an evenly extending profile. In all cases in the amended claims, references to extrusion are structural and must be given patentable weight.

The original claims were rejected under 35 USC 102 and 103 for lacking distinctions from the Osten '758 patent and the Haas patent. Many of the original claims did in fact define distinctions from these references, and amendments to the claims have made these distinctions more clear and emphatic.

The differences between the present claims and the cited references relate to important differences in structure and function. For example, neither of the cited references is designed for or able to support a heavy sash. Many of the differences in the subject matter claimed derive from the larger forces and stronger components required for supporting and counterbalancing especially heavy sash.

The applied references both rely on biter mechanisms that lock by digging into window jambs, and this is not a reliable way of

locking a heavy sash having powerfully counterbalanced shoes. Biter locks also mar the jamb surfaces they lock against, and this would become a major problem in locking shoes counterbalanced by the large forces required for a heavy sash. The references actuate a shoe locking mechanism by sliding a sash laterally off a shoe. This also is not practical or reliable for heavy sash, which require that shoes be locked securely in place before a sash is lifted or removed from the shoes. The references require that a sash be moved laterally against a spring-biased jamb. (For Osten, see companion Patent 2,903,736 referred to in the specification at column 4, line 20.) This also is not practical for especially heavy sash.

The references both apply sash weight to sash shoes in regions not directly below counterbalance elements so that the shoes are subject to moment arms turning the shoes about horizontal axes. This is deliberate in the case of each reference, which relies on pivoting of the shoes in response to sash weight as a way of activating shoe-locking mechanisms. In contrast, the subject matter claimed is designed to avoid moment arms rotating sash shoes on horizontal axes. This can produce troublesome friction, making support systems difficult to move when sash weights become large.

The high strength required for components supporting a heavy sash leads to other claim distinctions such as shoe and support shapes and configurations and the ability to use different numbers of counterbalance elements connected to shoes of different widths. The problems of counterbalancing an especially heavy sash lead to many specific and unobvious distinctions between the applied references and the subject matter of the present claims as follows:

Claim 1

The Osten '758 support arms are spring biased, rather than freely pivotal. They also do not assume dependent positions when not supporting a sash, since they are biased outward at all times. Since the Osten support arms lack the claimed inwardly dependent positions, they also do not engage sash shoes in inwardly dependent

positions as claimed. The Osten sash support arms also do not engage shoes in positions vertically under counterbalance elements as claimed, but intentionally engage shoes in regions offset from counterbalance elements. This places a cantilevered load on the sash shoes, which Osten requires and which the claimed arrangement avoids.

Claim 2

The references do not suggest sash supporting platforms that have inner regions engaging inwardly dependent sash support arms and outer regions engaging sash support arms in outwardly extended positions. A simple, single place engagement is all that the references suggest.

Claim 3

Neither reference suggests counterbalance elements connected to shoes vertically above outer platform regions.

Claim 4

Neither reference suggests locking elements that lock to jamb projections, since both references suggest biting lock elements that engage smooth jamb surfaces lacking projections.

Claim 5

The locking elements of the cited references are deployed when sash weight is laterally removed from a shoe; and when undeployed, the cited lock elements are not latched as claimed.

Claim 6

Neither reference suggests that locking elements be hooks or that they be extruded of metal.

Claim 7

Neither reference suggests that shoes and sash support arms be formed of metal extrusions, and the shapes proposed for the shoes suggested by the references are not configured to be extrudable.

Claim 8

Since the references do not suggest forming shoes of extrusions, they also do not suggest forming shoes of different predetermined lengths of a shoe extrusion so that the shoes can vary in width.

Claim 9

The references do not suggest connecting shoes to different numbers of counterbalance elements or using shoes of different widths adapted for such connections.

Claim 10

Osten does not suggest extrusion of sash support arms, and the spring bore hole suggested for the Osten sash support arm is unextrudable. Osten also does not suggest sash support arms available in different lengths or using different extrusions to form such different lengths of sash support arms.

Claim 11

Although code markings to indicate part sizes are commonplace, the cited art contains no suggestion for extruding code lines on different lengths of support arms.

Claim 12

The references do not suggest sash shoes formed as extrusions and do not suggest shoe configurations that are extrudable. The references therefore fail to suggest an extrusion having a

predetermined profile establishing an elevational configuration of a sash shoe. Further, the references do not suggest an extruded profile configuring an upper region of a shoe for interconnection with a counterbalance element, and the references instead suggest unextrudable connections to counterbalance elements. The references also fail to suggest an extruded profile configuring a lower region of a shoe to support a sash. There is no precedent known to applicants in the sash counterbalance shoe art for forming a shoe as an extruded profile as claimed.

Claim 13

The Osten reference, which is the only one suggesting sash support arms, does not suggest that they be extruded and does not suggest a support arm configuration that can be extruded.

Claim 14

The references both teach against resting a sash or sash support arms vertically below an upper region of a shoe interconnected with counterbalance elements.

Claim 15

The Osten sash support arms do not assume inwardly dependent positions when not supporting a sash, since they are spring biased to their outward positions.

Claim 16

Neither reference suggests jamb projections engaged by shoe locking elements, and both references rely on biting locks.

Claim 17

Neither reference suggests locking elements formed of a metal extrusion.

Claim 18

The locking elements of the cited art are not formed as hooks, and these references do not suggest jamb projections that hooks can catch on. Nor do the references suggest latches that latch locking elements in undeployed positions, since the prior art locking elements are always biased into locking position.

Claim 19

The references do not suggest an extruded profile configuring a mid-region of a shoe to support a guide.

Claim 20

The references also do not suggest an extruded profile configuring a shoe groove to retain a guide.

Claim 21

The references lack any suggestion for an extruded shoe profile configuring a latch retaining groove for a latch and a pin retaining groove for a hook.

Claim 22

The references do not suggest shoes formed of predeterminedly variable lengths of an extrusion.

Claim 23

The references do not suggest shoes of different widths having upper regions adapted to interconnect with different numbers of counterbalance elements.

Claim 24

The references do not suggest sash support arms available in different lengths from different metal extrusions.

Claim 25

Neither reference suggests that code indications of size be extruded.

Claim 29

No cited reference suggests a metal extrusion having a predetermined profile establishing an elevational configuration of a sash shoe. The references further fail to suggest that any such extruded profile configure an upper region of a shoe to interconnect with a counterbalance and configure a lower region of the shoe as a platform to support a sash. For lack of suggesting that a sash shoe be made from an extrusion, the art also fails to suggest that such a shoe have a width established by a predetermined length of the extrusion.

Claim 30

The references do not suggest locking hooks mounted on sash shoes. The locking mechanisms that the references do suggest are always biased toward deployment and do not hang downward from a shoe when deployed to an operative position.

Claim 31

The references do not suggest forming shoe lock hooks of a metal extrusion.

Claim 32

The references do not suggest locking elements that are latched in inoperative positions and do not suggest spring latches

that hold locking hooks in inoperative positions. Springs in the referenced locking mechanisms do not latch, but bias the locks into jamb engagement.

Claim 33

The references do not suggest shoe locking hooks that are manually latchable or unlatchable by pressing between ends of a hook and a spring latch.

Claim 34

The references do not suggest an extruded shoe profile configured with a pin groove and a spring groove for respectively receiving a pivot pin at a spring latch.

Claim 35

The references do not suggest a resin guide mounted on an extruded shoe.

Claim 36

The references do not suggest an extruded shoe profile configuring a mid-region interlock for holding a guide.

Claim 37

The references do not suggest shoes of different widths set by different predetermined lengths of a shoe extrusion.

Claim 38

The references do not suggest connecting a shoe to different numbers of counterbalance elements.

Claim 39

The references do not suggest that each of a plurality of sash support elements be formed of a metal extrusion having a profile establishing an elevational configuration. Neither reference suggests an extrusion profile forming a shoe with an upper region engaging a counterbalance and a lower region supporting a sash. Instead, the shoes of the cited art are formed of a hook part serving as an upper region and a platform part serving as a lower region, and the combination of these is not configured to be extrudable. Although Osten suggests sash support arms, he does not suggest that they be formed of an extruded element. The support arms he does suggest have spring recesses that are not extrudable.

Claim 40

Neither reference suggests an extruded element forming a shoe lock.

Claim 41

Neither reference suggests an extruded shoe profile configuring a pin groove for a pivot pin for a shoe lock.

Claim 42

Neither reference suggests a shoe lock that is latched in an undeployed position, and neither reference suggests a resilient latch for a shoe lock.

Claim 43

Neither reference suggests a shoe lock that is manually latchable and unlatchable, since neither reference suggests a latchable lock.

Claim 44

Neither reference suggests a shoe lock that is downwardly dependent from the shoe when deployed.

Claim 45

Neither reference suggests a resin guide mounted on an extruded metal shoe.

Claim 46

Neither reference suggests an extruded shoe profile configuring a locking slot for a resin guide.

Claim 47

The Osten sash support arms are not downwardly dependent when not supporting a sash, because they are constantly biased to outward positions.

Claim 48

Osten does not suggest spring support arms braced against movement beyond downwardly dependent positions.

Claim 49

Neither reference suggests shoes of different widths established by different predetermined lengths of a shoe extrusion.

Claim 50

Neither reference suggests shoes of different widths connected to different numbers of counterbalance elements.

Claim 51

Osten does not suggest extrusions of different profiles establishing different lengths for sash support arms.

Claim 52

Neither reference suggests extruded code lines indicating different support arm lengths.

Claim 53

Osten does not suggest sash support arms that hang downward in dependent positions when not supporting a sash. Neither does Osten suggest sash support arms that move from inward to outward positions in response to supporting weight of the sash. Osten's sash support arms are constantly biased outward. Neither Osten nor Haas suggest support arms resting on sash shoes vertically under counterbalance elements, as claimed. Both references deliberately offset the sash weight support from the counterbalance element to pivot the sash shoe for jamb locking purposes.

Claim 54

Mounting brackets for the Osten sash support arms do not limit movement in dependent positions, as claimed.

Claim 55

The references do not suggest extruded metal shoes having a profile forming upper regions connected to counterbalance elements as claimed.

Claim 56

Osten shoe support regions do not engage support arms in inwardly dependent positions when a sash is lowered, as claimed.

Claim 57

The Osten support arms do not move from inward to outward by sliding along shoe support regions as a sash is lowered, as claimed.

Claim 58

Osten's suggestion for sash support arms is inconsistent with formation of a metal extrusion, as claimed.

Claim 59

Osten does not suggest or have any need for extruded support arms having different lengths and provided with extruded coding lines, as claimed.

Claim 60

Neither reference would lead an ordinary worker to form a shoe of a metal extrusion.

Claim 61

Although each reference suggests locking devices, neither locking device is a hook. The references also do not suggest locking devices that are latched and unlatched, since each locking device is constantly biased toward a locking position. Neither reference suggests that locking hooks be dependent from shoes to engage jambs and hook under lances formed in the jambs. In contrast, each reference suggests locks that bite into smooth jamb surfaces. Neither reference suggests hooks that can be latched in positions clear of the jambs, since the locking devices suggested are not hooks and are not latchable.

Claim 62

Neither reference suggests resilient latches for latching shoe locking hooks.

Claim 63

Neither reference suggests locking hooks that are manually movable to latched positions. Nor do the references suggest unlatching locking hooks by pressing between ends of the hook and the latch.

Claim 64

Neither reference suggests extruding shoe locking hooks of metal.

Claim 65

Neither reference suggests extrusion formed grooves in shoes to receive pivot pins for locking hooks.

Claim 66

Neither reference suggests extrusion formed slots in shoes for retaining latches for locking hooks.

Claim 67

Osten does not suggest sash support arms that hang downward in positions that engage sash end regions of shoe platforms when a sash is lowered. The Osten support arms are spring biased outward as the sash is lowered. The Osten sash support arms do not engage jamb end regions of shoe platforms, and the Osten counterbalance elements do not exert a lifting force vertically above the jamb end regions of the shoe platforms. Instead, the Osten shoe platforms bear sash weight offset from the counterbalance elements to rotate the shoe platforms for locking purposes.

Claim 68

The Osten support arms do not slide over steps in the shoe platforms as the support arms move from inward to outward.

Claim 69

The Osten support arms are not braced in downwardly hanging positions.

Claim 70

Nothing in Osten or the other references would lead to support arms formed of a metal extrusion.

Claim 71

Osten does not suggest different lengths of support arms.

Claim 72

Osten does not suggest extruding code lines on different extrusions of support arms to indicate different lengths.

Claim 73

Neither reference suggests that sash shoes be formed of a metal extrusion.

Claim 74

Neither reference suggests sash support arms transferring sash weight to the shoes at regions vertically below lifting regions to minimize any moment arm tending to turn the shoes around a horizontal axis. Both references offset the sash load deliberately to rotate the shoes around a horizontal axis. A sash supported directly below a counterbalance lifting region would interfere with the lifting region when raised from the shoes. The references avoid this problem by supporting the sash in a region offset from the lifting region, and neither reference suggests support arms that are movable to avoid interference between the support arms and the lifting region when the sash is lifted from shoes.

Claim 75

Osten does not suggest support arms that hang dependently when not transferring sash weight to the shoes.

Claim 76

Neither reference suggests shoes formed of a metal extrusion.

Claim 77

Neither reference suggests sash support arms formed of a metal extrusion.

Claim 78

Neither reference suggests different lengths of sash support arms or different extrusions forming different lengths of sash support arms.

Claim 79

The references do not suggest shoe platforms extending from support regions toward the sash to engage support arms hanging dependently from the sash being lowered.

Claim 80

Neither reference suggests counterbalance shoes biased upward vertically above support regions bearing sash weight to minimize any moment arms tending to turn the shoes around horizontal axes. The references suggest to the contrary that the sash weight rotate the sash shoes around horizontal axes. The references also do not suggest support arms that extend outward to support regions under counterbalance lifting regions, but are movable to allow upward and lateral movement of the sash between the lifting regions. The references do not suggest support arms that reach outward far enough to be under lifting regions in the first

place so that inward movement of support arms is irrelevant to the reference suggestions for lateral movement of the sash within the lifting regions.

Claim 81

Osten does not suggest support arms that move in response to being subjected or not subjected to sash weight. Osten's arms are spring biased outward and do not move in response to sash weight.

Claim 82

Neither reference suggests shoes formed of a metal extrusion.

Claim 83

Neither reference suggests sash support arms formed of a metal extrusion.

Claim 84

Neither reference suggests different lengths of sash support arms or forming these of extrusions.

Claim 85

Neither reference suggests sash support arms that move inwardly toward the sash when the sash is lifted from the shoes.

Claim 86

Osten does not suggest sash support arms that hang dependently from the sash. Lateral movement of the Osten sash is not affected by the sash support arms and does not require that they hang dependently from the sash. Neither reference suggests that the sash weight not subject the shoes to moment arms tending to turn

the shoes about horizontal axes; both references suggest the contrary.

Claim 87

The references do not suggest forming sash shoes of a metal extrusion.

Claim 88

The references do not suggest forming sash support arms of a metal extrusion.

Claim 89

The references do not suggest different lengths of support arms or different extrusions to form them.

Claim 90


Osten does not suggest shoe platforms extending toward the sash from the sash weight support regions engaged by the support arms.

EXTENSION OF TIME

A Petition for Extension of Time along with the required fee accompanies this Response.

For all the reasons set out above, the previous rejections can now be withdrawn and the elected and amended claims can be allowed. For any question on this, the Examiner is invited to call applicants' attorney.

Respectfully submitted,
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Enclosures

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